

## ATTACHMENT A

IDEQ commitment to address WBAG and BURP Issues.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 Sixth Avenue  
Seattle, WA 98101

Reply To  
Attn Of: OW-131

MAY - 6 1999



Stephen Allred, Administrator  
Idaho Division of Environmental Quality  
1410 N. Hilton  
Boise, Idaho 83706

*Steve*  
Dear Mr. Allred:

We have completed our review of the Idaho 1998 Section (§) 303(d) list submitted to the Environmental Protection Agency (EPA) in accordance with the Clean Water Act. This was clearly a monumental effort as it is the first time the State of Idaho applied the use of the Water Body Assessment Guidance (WBAG) process and Beneficial Use Reconnaissance Project (BURP) data to make listing decisions. We found the final list to be well organized and well documented, and responsive to the numerous comments submitted on the draft list.

As discussed in detail below, we do have specific concerns with the process Idaho used to list and de-list waters in 1998, and would like you to consider working with us to revise it.

WBAG process and revisions.

Idaho relies on a decision matrix in the WBAG to interpret BURP and other data to make §303(d) listing decisions. We believe that the use of biologic, chemical and physical data is an appropriate approach for making these decisions, and commend Idaho on its work over the past several years to establish an excellent biologic monitoring program. Our concerns with the process lie primarily with the interpretation of the data, and to a lesser degree, on how the data are collected.

Specific concerns with the process include the following, which are explained in more detail in Attachment A:

- the method of establishing major vs. minor criteria violations;
- the method of interpreting macroinvertebrate, habitat, algae, and fish data, and how these indices are combined;
- the method and data used to evaluate salmonid spawning use support status;
- interpretation of data collected from intermittent streams, springs, and lake outlets;
- representativeness of the biological and habitat data;
- procedures used to collect certain types of data.

We believe these concerns are serious, and must be addressed. We also understand that the Idaho Division of Environmental Quality (IDEQ) is planning to revise the WBAG process and has already identified the need to address many of these concerns prior to the year 2000 listing cycle. Given the significant time and resource commitment which this would involve, revising the process to affect the 1998 list would significantly overlap and adversely impact efforts to produce a year 2000 list, which are expected to begin in the next several months.

Given the apparent time and resource overlap, it appears reasonable that efforts to revise the WBAG process be incorporated into the year 2000 list cycle. Considering these circumstances, we would approve the 1998 list, with exceptions noted below, if IDEQ would provide the following assurances:

1. Revise the WBAG process in collaboration with EPA to address concerns identified above and reach a mutually acceptable § 303(d) decision process for the year 2000 listing cycle; and
2. For the year 2000 list, utilize all 1997 and 1998 BURP data for those waters not evaluated in 1998, plus any other data acquired by IDEQ as part of the year 2000 list process; and
3. In sub-basin assessments for TMDLs due in the year 2000 and later, use all BURP data collected since 1993 and the revised WBAG process to identify impaired waters, write TMDLs for all impaired waters whether or not they are on the 303(d) list; and
4.
  - a. In the next listing cycle after year 2000, commit to revisit all listing decisions for waterbodies using the new WBAG process and all BURP data collected since 1993, unless the water was previously considered for the year 2000 list; or
  - b. Commit to re-monitor all waters sampled between 1993 - 1996 (unless they have been sampled more recently), and use all BURP data collected or otherwise available since 1997 in the next listing cycle after year 2000.

We believe this is the best way to achieve our mutual goals of establishing a sound listing process and moving on to the year 2000 listing cycle. Completing revisions to the WBAG process is likely to be very time consuming, particularly with the addition of a public review process, and could delay completion of a draft year 2000 list. We feel this is reasonable considering the workload, but ask that you submit a schedule outlining when you believe you could complete a final year 2000 list.

#### Prioritization of the List:

Waterbodies included in the 1998 § 303(d) list were not assigned a priority ranking for TMDL development as required by federal regulations. Although for all practical purposes this has been done by the establishment of the eight year Idaho TMDL schedule, there is still a need to assign priorities to waters on the 1998 list, as was done for the 1996 list. We hope this will be a relatively straight forward amendment to the 1998 list.

Waters to be Disapproved:*Temperature*

In the 1998 list IDEQ specifically excluded from listing approximately 150 waters for which data showed violations of temperature criteria. In addition, Idaho de-listed several waters for which data showed temperature criteria violations but which the WBAG decision process otherwise showed uses were fully supported.

EPA fully recognizes the concern Idaho raises regarding the validity of the Idaho temperature criteria, and we support Idaho's intention to conduct a study to establish more appropriate water quality standards. We understand that you intend to defer until the latter part of the TMDL schedule those waters listed for temperature. Deferring these temperature TMDLs does not affect Federal requirements to list all waters which do not meet applicable water quality criteria. Therefore, we intend to disapprove the exclusion of waters from the Idaho list which have exceeded the applicable temperature criteria and will take subsequent action to issue these waters for Idaho.

*Other Waters*

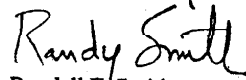
Several other waters were identified which EPA found were de-listed for inappropriate reasons. We found that the rationale for de-listing some of these waters was not well documented, and in some instances was inconsistent with the process and assumptions identified in the WBAG and other IDEQ supporting documents. We intend to disapprove the de-listing of these waters and will take subsequent action to re-list these waters for Idaho.

We want to support you in any way we can and propose the following steps to conclude the review and decision process for the 1998 303(d) list:

- EPA and IDEQ discuss any critical issues raised by this letter, then IDEQ responds in writing to our offer to partially approve - partially disapprove the list.
- Assuming IDEQ provides commitments outlined in steps 1-4 above, and assigns priorities to waters on the 1998 list, EPA will officially approve most of the list, and will officially disapprove waters with identified temperature violations and waters with other concerns.
- EPA staff will begin work immediately with IDEQ staff to identify a course of action to address issues identified above for the 2000 and subsequent list cycles.
- EPA will propose the listing of disapproved waters identified above, take public comment, and issue these waters for inclusion in the Idaho 1998 303(d) list.

We regret the need to disapprove a portion of the Idaho list, but look forward to your response on our offer to work collaboratively on revisions for future listing cycles. Please call me at (206) 553-1261 if you have any questions on this matter, or you may call Leigh Woodruff at our Idaho Operations Office at (208) 378-5774.

Sincerely,

A handwritten signature in black ink that reads "Randy Smith". The signature is written in a cursive, slightly slanted style.

Randall F. Smith  
Director  
Office of Water

Attachment

cc: Michael McIntyre, IDFQ

## **Attachment A**

The following identifies EPA's specific concerns with the process used for collecting and interpreting biological and habitat data for the Idaho 1998 § 303(d) list. A § 303(d) listing cycle by which each of these areas must be addressed is also identified. Upcoming proposed regulation revisions are expected to consider listing cycles longer than two years, therefore, changes expected by the year 2002 listing cycle are actually expected by the next listing cycle after 2000 which may or may not be 2002.

### **1. The method of establishing major vs. minor criteria violations.**

2000. The criteria for determination of major versus minor exceedances of water quality criteria must be clearly defined in a non-subjective manner. The current approach relies primarily on subjective judgments by regional staff as to whether biota have been impacted. Objective criteria must be established for deciding when a violation is considered a "major" exceedance, and where there is room for discretion (for example, X or greater number of exceedances in Y time frame is a major exceedance, between Q and P number of exceedances there is discretion). The 305(b) guidelines are a starting point for options you may want to consider.

For the 1998 list, objective criteria were established to evaluate temperature violations, i.e., temperatures more than three (3) degrees over the criteria were considered "major" violations. Raising the bar like this amounts to changing the criteria in the regulations by three degrees, and is not an acceptable approach unless the State first completes the regulation revision process.

### **2. The method of collecting macroinvertebrate, fish, algae and habitat data.**

#### **A. Study Design.**

2000. The sampling season selection, is primarily July 1 through October 15. However, DEQ does vary from this index period. These deviations from the index period need to be documented and justified. These index periods should be absolutely no longer than three and a half months, the shorter the index period the less inter-annual variability.

2000. Appropriate sample site selection is very important to collect a sample representative of a given stream segment. The existing BURP Workplan write-up is a good start, however, we feel a clearer process would add great value to the quality of BURP data and why specific sites are selected and what they represent. For example, the plan should better describe the available methods commonly used to stratify streams, and how this information will be used to establish what portion of a stream a BURP site can reasonably represent. In addition, the plan should identify the sampling frequency needed to adequately represent the physical, chemical and, biological integrity of a given segment of stream.

2000. **Quality Assurance procedures.** Due to problems with temperature measurements collected during previous BURP monitoring, a more complete and rigorous temperature QA/QC procedure must be developed. We recommend that it not only include calibration of instruments used, but a protocol for selecting appropriate locations and times and duration of monitoring (assuming the use of recording thermographs in the future - see F. below).

## B. Physical Habitat.

**2000. Width and Depth.** BURP modifies the Bauer and Burton methodology for this parameter. Measurements (both wetted width and depth and bankfull width and depth) are taken 10m above each of the three macroinvertebrate sampling locations. The problem with this method of selecting a location is that it may be in the same riffle as the macroinvertebrate sample, it may be in a pool above the sample, or it may be in some transition between the two. This has the potential to introduce unnecessary variability into the measurement. For example, one stream might have all its cross sections measured in riffles, another might end up with all of them in pools.

There is value to both riffle cross sections and pool cross sections. Cross section locations should be selected carefully to characterize either a riffle or a pool, but the two should not be mixed. One recommendation would be to distribute cross sections proportionally to the habitat types in the stream which would provide a general description and characterization of the habitats available. The representative riffle cross section (at bankfull) should be used for the width/depth ratio of the reach.

It is important to note that only by accurately estimating bankfull will the width/depth ratio and the pebble count data be useful or comparable (either from one stream to another or from one time to another at the same location). If wetted widths are used, for example, the seasonal variability is likely to mask any other variability and none of the comparisons will be useful or valid. Estimating bankfull generally takes some training and experience, as it is a judgment call that may be based on several different indicators, in combination. If inconsistent and inaccurate bankfull estimates are made, the variability will be random, rather than seasonal, but the comparability problems will remain. This is an area where specific training and field audits of crews is necessary to ensure data quality. It may be helpful to include an area on the BURP field data sheets to record bankfull indicators, such as scour lines, top of point bars, etc.

## C. Water Column Measures.

**2000.** The collection of only one temperature measurement per site as part of the BURP process is clearly insufficient in the absence of other available water column data. Due to the importance of temperature issues it is also recommended that recording thermographs be used instead of single temperature measurements. However, it is recognized that use of thermographs will increase the costs of monitoring, as it is necessary to revisit the sites to retrieve the instrument at the end of the season. We also understand that the State might not have the resources to place them at every site they monitor every year, but they should develop a strategy and a prioritizing mechanism (e.g., higher priority for sites where salmonid spawning uses are present) for collecting such data each year.

**2002.** At a minimum, IDEQ should measure and record Dissolved Oxygen ( $\mu\text{g/L}$ ), pH, and Conductivity ( $\mu\text{ohms}$ ) at each sample site. These measures are simple and inexpensive, and they provide important information about aquatic resource.

## 3. The method of interpreting macroinvertebrate, fish, algae and habitat data.

### A. MBI data analysis.

**2000.** The current method of using slope breaks on a curve and a constructed reference condition is acceptable on an interim basis only. The MBI, as it is currently constructed, is based on data that was available as of 1995. For the next listing cycle we strongly encourage DEQ to consider a more established approach whereby *a priori* selected reference sites are identified and data from these and known impacted sites are used to establish decision points for aquatic life status determinations. DEQ has a much richer dataset than was available in 1995. We

suggest DEQ follow the procedure outlined in Fore et al (1996) to independently identify and test a series of metrics (those in the MBI plus others) and evaluate the MBI index. This type of analysis, while possibly modifying the MBI, can only strengthen the bioassessment process.

The continued use of a constructed reference and slope break point approach may be acceptable if the process is updated by incorporating new data collected since 1995, and additional sites are monitored at random to establish a database more representative of the true distribution of biologic conditions in the state. We continue to recommend, though, that Idaho pursue using a reference condition approach, since existing data could be used to establish decision points, and it is a more accepted approach in the literature.

#### **B. RIBI data analysis.**

2002. The questions in the RIBI align with many of the metrics one could calculate. BURP monitoring builds sufficient data to develop and use a quantitative fish assemblage index. BURP taxonomic and quality assurance procedures for fish are quite good, but this data is not used to its full potential in the RIBI. Each of the RIBI questions could be quantified into a metric and compared to a reference condition. There are complicating factors that will make this task more difficult for fish than it is for macroinvertebrates. The primary factors are the significant stocking of game fish in Idaho waters and the migratory nature of salmonids. However, these and other complications are not insurmountable barriers. There has been work in some regions of Idaho that DEQ could use as a basis for the development of a quantitative fish assemblage index. There has certainly been less fish assemblage work conducted in depauperate western streams than in mid-western or eastern streams.

Although it is not an easy task, DEQ must develop a quantitative fish assemblage index. This index should have a suite of tested metrics and a set of scoring criteria based on regional reference sites. This index should be based on BURP data as well as on other studies that have been conducted in Idaho DEQ and other parts of the western U.S.. The index should be peer reviewed by experts both within the state of Idaho and others in the western U.S.

#### **C. AI data analysis.**

2002. DEQ analyzes available periphyton data using the ABI which is based on the work in Kentucky and Montana. DEQ has also worked with Dr. Pete Koetsier at Boise State University to review the ABI and analyze the BURP periphyton data. DEQ should continue to improve the field, lab and analysis techniques for the use of periphyton, as it is a promising indicator.

#### **D. HI data analysis.**

2000. In the BURP protocol, both bankfull and wetted width and depth are measured. In the habitat assessment, only wetted width and depth are used. The inevitability of seasonal variability is cause for concern. Depending on the time of year it is sampled, the shape of the channel and whether or not it was a wet or dry year, the width/depth ratio of the wetted channel could change significantly without any change in the channel itself. For upcoming listing cycles, bankfull width must be used to calculate width to depth ratios, or we expect a more thorough explanation as to why wetted width is appropriate given its inherent variability.

2002. The increased scrutiny on state environmental agencies due to widespread habitat degradation, declines in salmonid stocks, and Endangered Species Act listings will likely move habitat assessment toward more quantitative analysis. To DEQ's credit, the HI is a first step toward quantitative assessment of physical integrity. DEQ has set reference conditions by ecoregion using a partial set of quantitative measures. DEQ possesses the data to continue the development of a broader set of quantitative habitat indicators, and it is recommended that DEQ continue to draw upon research to provide a strong foundation for this effort.

For future listing cycles greater documentation of methods and increased training is needed, both of which should greatly decrease the variation and inconsistency in field work performance, including variability in parameter



selection, parameter measurements, and rating or evaluation of qualitative parameters. In addition, unless their repeatability and ability to evaluate human influence can be well documented, qualitative (or "measured ocularly") habitat parameters should be eliminated. It should be noted, that many experts feel that qualitative measures should be discarded entirely.

#### **E. Sequential nature of data analysis.**

2000. Currently indices are used in a sequential manner to make coldwater use support decisions. For example, fish, habitat and algae data are only considered if results from preceding indices are indeterminate. In order to provide a complete assessment of biological conditions, for the next listing cycle indices must be used simultaneously rather than sequentially, but the indices may have different weights for decision making. For example, MBI could have more weight than the habitat index or fish index since the latter indices are not as quantitative or well established in the literature.

#### **F. Boundary Changes.**

2000. In some instances DEQ uses BURP and other data to change the boundary of a listed waterbody. We agree that this may be appropriate, but it is extremely important to document and explain the rationale supporting these boundary changes. Such documentation was provided after the final list was submitted. In future list cycles, improvements in the documentation of these changes are needed, and such documentation must be provided as part of the draft and final list packages. It may help to provide more specific guidance and examples to Regional office staff involved in making and documenting these decisions.

#### **4. The method and data used to evaluate salmonid spawning use support status.**

2000. For the 1998 list, IDEQ revised the salmonid spawning status decision rule to reflect that salmonid spawning is full support if 3 age classes of salmonids including juveniles are present, or if 2 age classes including juveniles are present and the habitat score exceeds 73. We can support the use of 3 age classes to establish that a water fully supports salmonid spawning, but at this time we cannot support the use of 2 age classes and a habitat score of 73 or higher. The HI cut-off for salmonid spawning is lower than the cut-off used to evaluate coldwater biota. The logic behind this is not clear, as many of the HI parameters are based on the habitat preferences of salmonid species. In addition, coldwater biota cut-off points vary depending upon ecoregion, ranging from 81 to 100, whereas a single cut-off point is used to evaluate salmonid spawning. We support developing cut-off points by ecoregion to address the different habitat expectations that occur with different soils, geology, vegetation and hydrology (some of the major factors that go into defining ecoregions).

In the longer term we believe it may be acceptable to use the 2 age class plus habitat approach once the habitat index is based on quantitative habitat measures (see 3.D. above), ecoregion specific scores are used, and cutoffs are at least as protective as those established for coldwater biota uses.

In responding to comments on the draft 1998 list, DEQ indicated that in circumstances where salmonid spawning uses exist or are designated but fish data are not available to evaluate use support status, macroinvertebrate data (and presumably coldwater biota cut-off points) would be used to evaluate use status. Use of MBI alone to evaluate salmonid spawning is inconsistent with DEQs decision process. As indicated in our May 6, 1999, letter, these decisions, particularly de-listings, must be revisited in future list cycles which should allow the state time to survey fish populations to adequately evaluate these uses. Where salmonid spawning is not supported we would expect these waters to be re-listed and that TMDLs be written. In addition, in all future list cycles, waters which are impaired by pollutants which may affect salmonid spawning should remain on the list until fish information is available to evaluate the use.

#### **5. Interpretation methods for intermittent streams, springs, and lake outlets.**

2002. In the 1998 list submittal package, DEQ indicates that it is not appropriate to use the WBAG decision process for intermittent streams, springs, and lake outlets because biota in these waters are much different than in perennial streams, on which the decision process is based. EPA agrees that it is not appropriate to apply the current decision rules to these streams. However, this leaves a gap in the State's decision process that should be filled, and having such procedures for evaluating these waters for the 2000 listing cycle would be desirable.

We recognize it will be resource intensive to develop these procedures, and many other revisions must be made by 2000. We believe it is reasonable to establish such methods by the next listing cycle, provided none of these waters are removed from the 303(d) list in the interim without an adequate basis to conclude that water quality standards are met.

**References:**

Fore, L.S., J.R. Karr, and R.W. Wisseman. 1996. Assessing invertebrate responses to human activities: evaluating alternative approaches. *Journal of the North American Benthological Society* 15(2):212-231.